

## CLAIMS

What is claimed is:

1. An apparatus for preventing paper double feeding in a paper feeding unit of a printer having a frame, a pickup roller which picks up sheets of paper stacked on a paper cassette and transfers the paper into the printer, and a plurality of paper guides which are installed at a front portion of the paper cassette and guide the paper transferred by the pickup roller, the apparatus comprising:
  - a stripper which is installed to be inclined at a predetermined angle with respect to the paper stacked on the paper cassette, and attached to at least one front side of each of the paper guides;
  - a lever which is installed at a side of the stripper and has a contact surface contacting the paper transferred by the pickup roller; and
  - a lever shaking unit which shakes the lever to intermittently contact a side of the paper transferred by the pickup roller;wherein a friction force is intermittently applied to the side of the paper such that double feeding of the paper is prevented.
2. The apparatus of claim 1, wherein the stripper comprises:
  - an opening groove formed on an upper portion of the stripper such that the contact surface of the lever contacts the side of the paper through the opening groove.
3. The apparatus of claim 2, wherein the lever is shaken so that the contact surface periodically at least three times contacts the paper while a front end of the paper passes from a lower end of the contact surface to an upper end of the contact surface.
4. The apparatus of claim 1, wherein:
  - the stripper comprises,
    - a plurality of sub-strippers; and
  - the lever comprises,
    - a plurality of sub-levers having the same number as the sub- strippers.
5. The apparatus of claim 1, wherein the friction force intermittently applied to the

side of the paper by the lever is larger than a resistance applied to the paper by the stripper.

6. The apparatus of claim 1, wherein the lever comprises:

a friction pad attached to the contact surface of the lever.

7. The apparatus of claim 6, wherein the friction pad is formed of a rubber material.

8. The apparatus of claim 1, further comprising:

a lever shaft which is placed at the side of the stripper and rotatably installed on the frame of the printer, wherein the lever is fixed on the lever shaft, and the lever shaking unit shakes the lever shaft so that the lever is shaken.

9. The apparatus of claim 8, wherein the lever shaking unit comprises:

a shaking plate fixed on the lever shaft;

a cam gear which contacts a first side of the shaking plate, rotates, and periodically shakes the shaking plate so that the lever coupled with the lever shaft is shaken;

an elastic member which is installed at a second side of the shaking plate and applies an elastic force to the shaking plate so that the shaking plate is closely attached to the cam gear; and

a driving motor which rotates and drives the cam gear.

10. The apparatus of claim 9, wherein the driving motor rotates and drives the pickup roller.

11. The apparatus of claim 9, wherein the elastic member comprises:

a compression coil spring.

12. The apparatus of claim 9, wherein the elastic member comprises:

a leaf spring.

13. The apparatus of claim 9, wherein:

the cam gear comprises,

a cam surface; and

the lever shaking unit comprises,

at least one cam protrusion formed on the cam surface that contacts the shaking plate.

14. The apparatus of claim 13, wherein the at least one cam protrusion comprises:  
three sub-cam protrusions formed at the same intervals along a circumference of the cam surface that contacts the shaking plate.

15. The apparatus of claim 8, wherein the lever shaking unit comprises:  
a shaking plate fixed on the lever shaft; and  
a solenoid which is coupled with the shaking plate and periodically shakes the shaking plate so that the lever coupled with the lever shaft is shaken.

16. A method of preventing paper double feeding in a paper feeding unit of a printer when sheets of paper stacked on a paper cassette are picked-up and transferred into the printer, the method comprising:

applying a first paper feeding resistance force to a first sheet of paper which is picked-up by a pickup roller and transferred along a paper path into the printer; and

intermittently applying a second paper feeding resistance force to a side of one of the first sheet of paper and a second sheet of paper disposed under the first sheet of paper.

17. The method of claim 16, wherein the applying of the first paper feeding resistance force comprises:

applying a resistance generated by a stripper which is installed to be inclined at a predetermined angle on the paper path.

18. The method of claim 16, wherein the first paper feeding resistance force is smaller than a first paper feeding force applied to the first sheet of paper by the pickup roller and is larger than a paper feeding force applied to the second sheet of paper due to a friction force between the first and second sheets of paper.

19. The method of claim 16, wherein the second paper feeding resistance force includes a friction force intermittently applied to the side of the second sheet of paper by a lever which is installed to be shaken on the paper path.

20. The method of claim 16, wherein the second paper feeding resistance force is larger than the first paper feeding resistance force.

21. An apparatus for preventing paper double feeding in a paper feeding unit of a printer having a frame, a pickup roller which picks up paper stacked on a paper cassette and transfers the paper into the printer, and a plurality of paper guides which are installed at a portion of the paper cassette and guide the paper transferred by the pickup roller in a paper feeding path, the apparatus comprising:

a stripper disposed on the paper feeding path, fixedly installed on the frame to be inclined at a predetermined angle with respect to the paper stacked on the paper cassette, and contacting the paper transferred by the pickup roller to apply a first paper feeding resistance force to the paper; and

a lever disposed on the paper feeding path, movably installed on the frame, and having a contact surface contacting the paper transferred by the pickup roller to apply a second paper feeding resistance force to the paper.

22. The apparatus of claim 21, wherein the paper comprises a first paper and a second paper, and the stripper applies the first paper feeding resistance force to the first paper while the contacting surface of the lever applies the second paper feeding resistance force to the second paper.

23. The apparatus of claim 21, wherein the lever selectively contacts the paper while the stripper contacts the paper.

24. The apparatus of claim 21, wherein the lever intermittently applies the second paper feeding resistance force to the paper.

25. The apparatus of claim 21, wherein the lever moves in a direction between a first position to allow the contact surface to contact the paper and a second position to allow the contact surface to be moved away from the paper passing the stripper.

26. The apparatus of claim 21, wherein the lever rotates in a direction perpendicular to the paper feeding direction.

27. The apparatus of claim 21, wherein the stripper comprises another contact surface contacting the paper and an opening formed on the another contact surface, and the contact surface of the lever is disposed on the opening of the another contact surface of the stripper.

28. The apparatus of claim 27, wherein the contact surface of the lever contacts the paper through the opening.

29. The apparatus of claim 21, wherein the paper comprises a first paper and a second paper, the first paper and the second paper generate a friction force between the first paper and the second paper, and the second paper feeding resistance force is equal to or greater than the friction force.

30. The apparatus of claim 21, further comprising:  
a lever shaking unit mounted on the frame to shakes the lever to intermittently contact the paper transferred by the pickup roller.

31. The apparatus of claim 30, wherein the lever shaking unit comprises:  
a resilient member biasing the lever in a first direction; and  
a motor moving the lever in a second direction to selectively allow the contact surface to contact the paper.

32. The apparatus of claim 31, wherein the lever shaking unit comprises:  
a shaft connected to the lever;  
a shaking plate connected to the shaft; and  
a cam connected to the motor to contact the shaking plate.

33. The apparatus of claim 31, wherein the shaft is parallel to a width direction of the paper perpendicular to the paper feeding direction, and the lever rotates with respect to the shaft.

34. The apparatus of claim 30, wherein the lever shaking unit comprises:  
a shaft connected to the lever; and

a motor controlling the shaft to rotate together with the lever about an axis disposed on one of the lever and the shaft.

35. The apparatus of claim 21, further comprising:

a single motor rotating the pickup roller and moving the lever with respect to the stripper.

36. An apparatus for preventing paper double feeding in a paper feeding unit of a printer having a frame, a pickup roller which picks up paper stacked on a paper cassette and transfers the paper into the printer, and a plurality of paper guides which are installed at a portion of the paper cassette and guide the paper transferred by the pickup roller in a paper feeding path, the apparatus comprising:

a stripper fixedly disposed on the paper feeding path to apply a first paper feeding resistance force to the paper fed by the pickup roller;

a lever movably disposed on the paper feeding path to selectively apply a second paper feeding resistance force to the paper fed by the pickup roller; and

a power source controlling the lever to selectively move with respect to the paper fed by the pickup roller to contact the paper.

37. An apparatus for picking up sheets of paper in a printer, comprising:

a lever intermittently applying a friction force to a rear side of the picked-up paper to prevent the paper from not being picked-up and double feeding of the paper.

38. A method of picking up sheets of paper in a printer, the method comprising:

intermittently applying a friction force to a rear side of the picked-up paper to prevent the paper from not being picked-up and double feeding of the paper.